

Remarks

I. Status

Claims 1-5 and 10-34 are pending in the application. Claims 1, 2, 3, 5, 10, 11, 12, 18, 20, 21, 26-29, and 32 have been amended.

II. Claim Rejections - 35 U.S.C. § 112

Claims 10-24 and 32-34 have been rejected under 35 U.S.C. 112 as allegedly failing to comply with the written description requirement. Claims 10-12, 18, 20-21, and 32 have been amended, and the rejection is respectfully traversed.

The Office Action asserts that the claimed “first processor” and “second processor” are insufficiently described in the specification. Amended independent claim 10 recites a “first processor” configured to “perform at least one read operation on a storage device based, at least in part, on information in a file system,” and a “second processor” configured to “record one or more I/O accesses performed with respect to the storage device in association with the at least one read operation.”

It is respectfully submitted that the specification provides clear and unambiguous support for these claim limitations. On page 3, lines 18-20, the specification reads: “The system of the present invention includes a storage device, a first software program that performs a read operation on each allocated data block on the device, and a second software program that records each I/O access to the device resulting from the read operation.” On page 7, lines 7-10, the specification states that the “first software program 120 is typically installed on each client computer,” while the “second software program can be storage manager 155.” The storage manager 155 resides on the storage management system 150, as shown in Fig. 1.

Additional written description of the system’s operation is found at page 7, lines 11-17:

Software program 120 runs on a client machine where it has knowledge of and access to the file system. When software program 120 operates, it systematically traverses through all of the used blocks on device 140 using the file system as the guide, performing read operations on each and every block. Meanwhile, software program 120 also communicates with storage manager 155 to record the I/O accesses it performs.

Amended independent claims 18 and 32 also recite a “first processor” and a “second processor” which perform similar activities. For the reasons stated above, the specification contains sufficient written description for these claims, as well. Therefore, it is respectfully submitted that the rejection of amended claim 10 and its dependent claims (11-17), amended claim 18 and its dependent claims (19-24), and amended claim 32 and its dependent claims (33-34), under 35 U.S.C. 112 is improper and should be withdrawn.

III. Claim Rejections - 35 U.S.C. § 102

Claims 1-2, 10-11, 13, 18, 20, 25-26, 28-29, 31-32, and 34 have been rejected under 35 U.S.C. 102(e) as being allegedly anticipated by U.S. Patent No. 6,665,779 (“Polfer”). Claims 1-2, 10-11, 18, 20, 26, 28-29, and 32 have been amended and the rejection is respectfully traversed.

Amended independent claim 1 describes a method for replicating data from a storage device. Claim 1 has been amended to require “performing at least one read operation on a storage device based, at least in part, on information in a file system associated with the storage device,” and “recording one or more I/O accesses performed with respect to the storage device in association with the at least one read operation.” Amended claim 1 further requires “identifying, based on the recorded I/O access information, one or more data blocks on the storage device that

contain valid data,” and “replicating the data blocks that contain valid data.” Independent claim 10 is a system claim corresponding to claim 1, and has been amended in a similar manner.

The amendments to claims 1 and 10 are modifications to the language and structure of the claims that broaden the claims. No new matter is added.

Polfer discloses a method for backing up data from a storage device having one or more partitions. A partition is specified in units of blocks, and a block map is generated to indicate whether each of the blocks in the partition includes any data (such as valid data) to be backed up. (Col. 6, lines 15-18). The block map includes an entry for each of the blocks to indicate whether the associated block has any data to be backed up. (Col. 6, lines 18-20). The block map is generated by traversing a file allocation table and setting flags indicating whether or not the respective blocks in the partition contain valid data. (Col. 6, lines 20-29). Then the block map is traversed and only those blocks that contain data to be backed up as indicated in the block map are backed up from the partition. (Col. 6, lines 33-35).

Polfer does not teach or suggest “recording one or more I/O accesses performed with respect to the storage device in association with the at least one read operation” or “identifying, based on the recorded I/O access information, one or more data blocks on the storage device that contain valid data,” as required by amended claims 1 and 10. (Emphasis added). The claimed invention replicates data blocks that contain valid data by identifying data blocks based on the recorded I/O access information, whether a FAT is present or not. The claimed invention is applicable to any storage system having a file system, including those using a FAT and those that do not.

Polfer, in contrast, identifies blocks containing valid data, and those that do not, based on information in the FAT. As is known in the art, a file allocation table (“FAT”) is a system used

by some file systems to specify which memory blocks on a disk are “allocated” (used to store file data). In one example, a FAT contains a matrix of elements each corresponding to a block on the disk. The elements in the FAT contain “chains” of pointers indicating where data in various files are stored. The file directory contains a pointer for each file indicating where the first data block of the respective file is stored. For example, the directory may indicate that the first data block of a particular file is stored in block 21. The FAT indicates where other data blocks in the file are located. In this example, the matrix element in the FAT corresponding to block 21 may contain “3,” indicating that the next data block of the file is stored in block 3. The matrix element corresponding to block 3 would contain a pointer to the *next* data block of the file, and so on. In using such a FAT, Polfer does not teach or suggest “recording one or more I/O accesses performed with respect to the storage device in association with the at least one read operation” or “identifying, based on the recorded I/O access information, one or more data blocks on the storage device that contain valid data,” as required by amended claims 1 and 10. (Emphasis added).

Amended independent claims 18, 29 and 32 describe methods and a systems to identify data blocks on a storage device that contain valid data, and comprise limitations similar to those of amended claims 1 and 10. For example, amended claim 18 requires “perform at least one read operation on a storage device based on information in a file system associated with the storage device,” and “instruct the first processor to record one or more I/O accesses performed with respect to the storage device in association with the at least one read operation.” Amended claims 29 and 32 also include limitations similar to those of amended claims 1 and 10. Thus, the arguments set forth above with respect to amended claims 1 and 10 apply equally to amended claims 18, 29, and 32. Accordingly, for the reasons discussed above with respect to amended

claims 1 and 10, amended independent claims 18, 29 and 32, and the claims that dependent upon them, are also patentable over the cited art.

In addition, claims 2, 11, 20, and 26 have been amended to improve the language of the respective claims. The amendments do not change the scope of the respective claims.

IV. Claims Rejections - 35 U.S.C. § 103

A. Claims 3, 12, 21 and 27

Claims 3, 12, 21 and 27 have been rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Polfer in view of U.S. Patent Application No. 2003/0195865 (Long). The rejection is respectfully traversed.

Claim 3 depends from amended independent claim 1. Claim 12 depends from amended independent claim 10. Claim 21 depends from amended independent claim 18. Claim 27 depends from amended independent claim 5. For the reasons set forth herein, amended claims 1, 5, 12 and 18 are patentable over the cited art. (Amended independent claim 5 is discussed below). Therefore, claims 3, 12 and 21 are also patentable over the cited art.

B. Claims 4-9, 14-17, 19 and 22-24

Claims 4-5, 14-17, 19 and 22-24 were rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Polfer in view of U.S. Patent No. 5,668,971 ("Neufeld"). The rejection is respectfully traversed.

Claim 4, which depends from amended independent claim 1, is allowable because amended claim 1 is patentable over the cited art, as discussed above.

Amended independent claim 5 contains certain limitations similar to those of amended claim 1. For example, amended claim 5 requires "performing at least one read operation on a

storage device based, at least in part, on information in a file system associated with the storage device” and “causing the storage device to record each I/O access performed with respect to the storage device in association with a read operation.” As discussed above, Polfer does not teach or suggest these limitations. Neufeld also fails to teaches or suggests these limitations. In addition, Polfer and Neufeld in combination do not teach or suggest these limitations. Therefore, claim 5 is also patentable over the cited art.

Claims 14-17, which depend from amended claim 10, are allowable because amended claim 10 is allowable, as discussed above.

Claims 19 and 22-24, which depend from amended independent claim 18, are allowable because amended claim 18 is allowable, as discussed above.

C. Claims 30 and 33

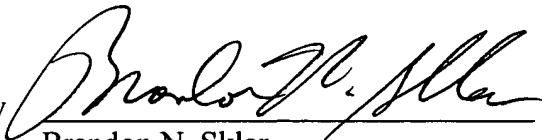
Claims 30 and 33 have been rejected under 35 U.S.C. 103(a) as being allegedly unpatentable over Polfer in view of U.S. Patent No. 6,757,778 (“Rietschote”). The rejection is respectfully traversed.

Claim 30, which depends from amended independent claim 29, is allowable because amended claim 29 is allowable, as discussed above. Claim 33, which depends from amended independent claim 32, is allowable because amended claim 32 is allowable, as discussed above.

V. Conclusion

In view of the foregoing, each of claims 1-5 and 10-34, as amended, is believed to be in condition for allowance. Accordingly, reconsideration of these claims is requested and allowance of the application is earnestly solicited.

Respectfully submitted,
Kaye Scholer LLP

By 
Brandon N. Sklar
Reg. No. 31,667
212-836-8653

Date: September 12, 2006